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Vol. 9. Part 8. Pp. 129-144. 15th August, 1940

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ROYAL ENTOMOLOGICAL SOCIETY OF LONDON

Series B.
TAXONOMY
(being the continuation of Stylops)

World List abbreviation: *Proc. R. ent. Soc. Lond.* (B)

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LONDON:
PUBLISHED BY THE SOCIETY AND
SOLD AT ITS ROOMS, 41, QUEEN'S GATE, S.W.7

Price 3s. 0d.

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THE DESCRIPTION OF *SCATOPHILA UNICORNIS* CZERNY, 1900 (EPHYDRIDAE, DIPTERA)

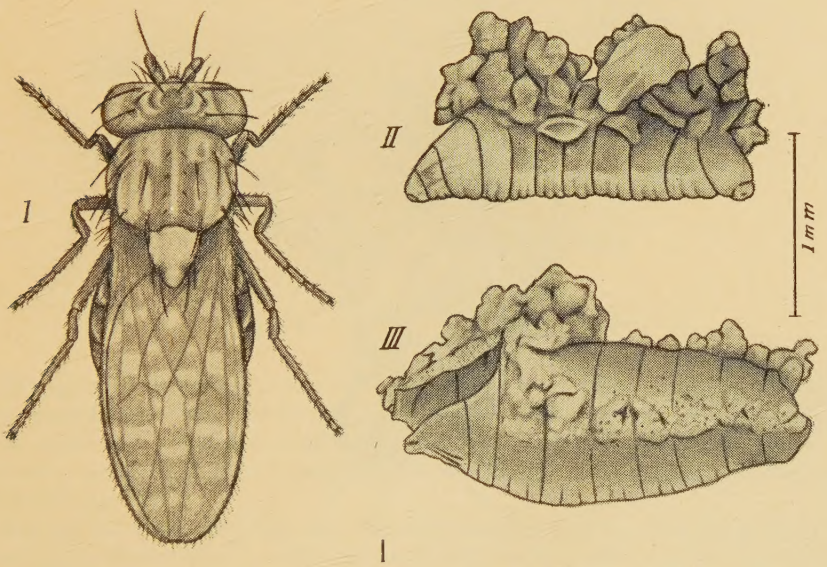
By Niels Bolwig, M.Sc., F.R.E.S.

In the spring of 1939 I often noticed a little *Scatophila* creeping on the flowerpots in the hothouse in Statens Plantepatologiske Forsøg in Lyngby, near Copenhagen, Denmark. As I could not identify the fly, I asked the opinion of S. L. Tuxen, Zoologisk Museum in Copenhagen, and Dr. Richard Frey, Helsingfors. Neither of these gentlemen was able to refer it to a described species.[1] I am very thankful to both of them for their help and also to Statens Plantepatologiske Forsøg for the help I have received there and for being allowed to carry out my studies in the laboratory; I am especially indebted to Dr. P. Bovien.

In the following, I give a description of the fly, its life-cycle and biology.[2]

Imago (fig. 1, I).

The female.—The female is a dark grey fly, hardly 2 mm. long, rather short and slow, with dotted wings. The *head* (fig. 2, I) is a little broader than the thorax. The opening



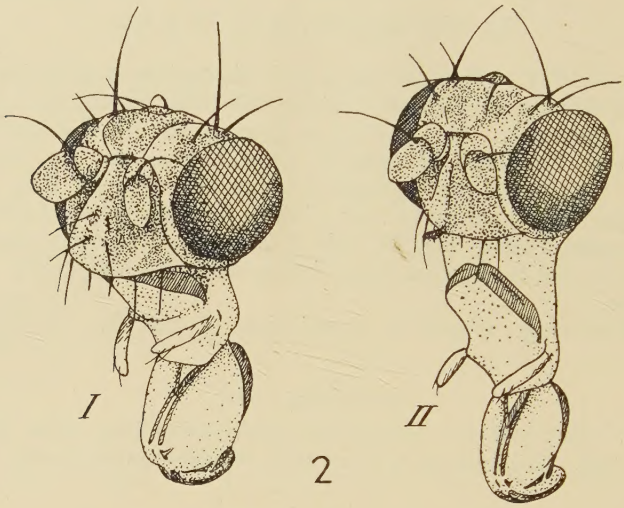
I

of the mouth is big, and the genae and the jowls are very short. The antennal furrows are divergent and not at all deep. The colour of the head is grey-brown with grey powdery

[1] Mr. J. E. Collin kindly examined the present paper when in proof and he is almost completely certain that the species is *Scatophila unicornis* Czerny, 1900. It has unfortunately not been possible to communicate with Mr. Bolwig but we have thought it best to insert this identification rather than follow the author's original intention, which was to describe the species as new.—Editor.

[2] All the illustrations are made with the help of Bolwig's drawing apparatus.

ornaments. There are only a few black bristles on the head. There is one pair of ocellar bristles, and 3 pairs of orbital bristles. The middle pair of the orbital bristles converges, the two other pairs diverge. Under the antennae one or two pairs of bristles may be seen. The lower pair is the strongest. Three pairs of strong downwards-directed bristles are seen



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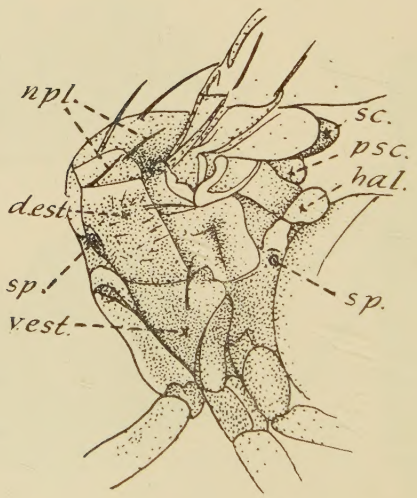

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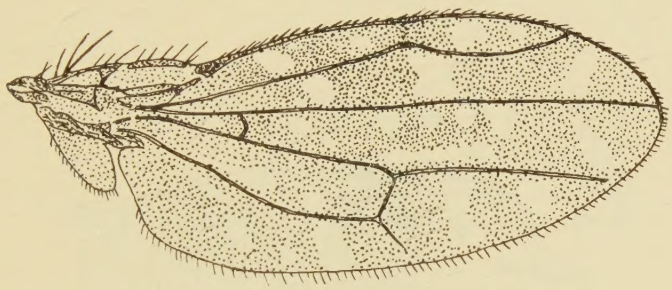
at the edge of the mouth-opening. The antennae are dark brown. The second segment carries black bristles. The distal segment is compressed and carries on its dorsal side near the base a strong protruding, pubescent arista. The mouth-parts are well developed, their sclerites are dark brown. The palps are reddish-brown, pubescent with whitish hairs. The *thorax* is broader than long. Its colour is grey-brown with yellow-grey powdery ornaments. As in *Scatophila laevigata* Lw. the ornaments consist of a strong, pale line in

the middle and some pale stripes lateral of this, but it differs from *Scatophila laevigata* Lw. in having the side-stripes just as clear and distinct as the middle-stripes. The bristles are black. The *acrostichal bristles* are very small. *Pronotum* has one pair of *posthumeral bristles*. Mesothorax carries two pairs of *dorsocentral bristles* and one pair of *supra-alar bristles*. There are two *notopleural bristles* (fig. 3, npl.) and the dorsal and ventral *episternum* of the mesonotum are each provided with a strong bristle (fig. 3, d.est. and v.est.). The *scutellum* carries two strong pairs of bristles on its edge. The *postscutellum* is convex. The *abdomen* is ovoid and short, it is black in colour. The first three segments are matt, the others shiny, sometimes with a green metallic hue. Second, third and fourth segments are provided with a yellow-grey, powdery spot on the sides. Another row of less visible spots is situated near the ventral edge of the 2nd to the 5th segment. In these last-mentioned spots the small abdominal spiracles are seen as little dark points. The *legs* are black. The proximal end and ventral side of the *tibia* may be a little paler. The *tarsi* are dark grey-brown. The hairs are weak and it is very difficult to state their exact colour. It seems that those on the ventral side of the tibiae and the tarsi are yellow, the other hairs brown. The bristles are black. *The wings* are smoked, pubescent with pale spots. The number of spots varies. The *wing scales* are dark and *the halteres* yellow.

The male.—The male is about 1·5 mm. in length. It greatly resembles the female, but can be distinguished by its smaller size, its more slender abdomen and its face, which protrudes into a tiny "proboscis," just above the mouth opening (fig. 2, II). Usually there are only two pairs of bristles at the edge of the mouth.



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The Egg.

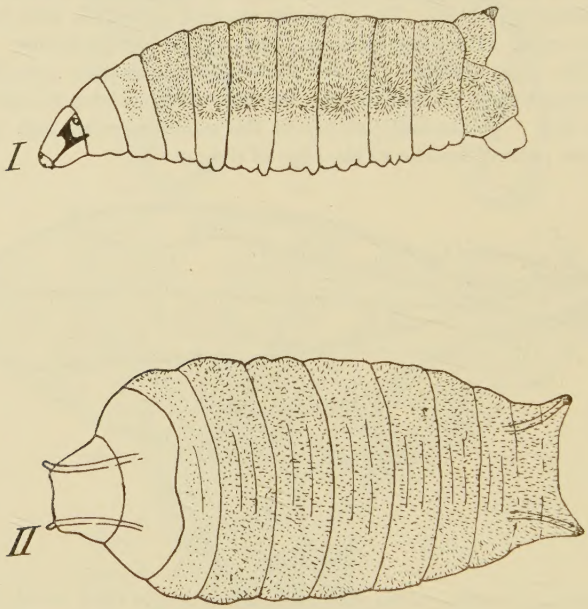
The egg of *Scatophila affinis* is 0·4 mm. long. It is longer than broad, slightly curved, with rounded ends. The ventral side is convex. A little disc is situated near its fore end on its dorsal side. This disc is the reminder of the nutritive cells. The surface of the egg-shell is marked with a faint polygonal reticulation, the masks of which are the imprint of the follicular cells.

The last day before hatching, the cephalo-pharyngeal skeleton, the mouth-hooks and the strongly chitinised plate in which the back-spiracles are situated may be seen through the egg-shell.

The Larvae (figs. 1, II, 5, I).

The exterior of each of the three larval stages does not differ much. They consist of 12 segments, the first of which carries the mouth-opening, while the anus and the abdominal spiracles are situated on the last one. The anterior part, from the second abdominal segment forward to the head, is conical, while the rest of the abdomen is nearly cylindrical in shape. In the living larvae the skin is rather transparent and the tracheae, the intestine and other organs are more or less visible through the skin. The dorsal side of the middle

of the third thoracic segment, the dorsal side of all the abdominal segments, and the entire last segment is covered with little hairs. These hairs are longer on the side than on the middle of the back. The rest of the body is covered with minute, non-cellular cuticular processes. All these processes point backwards. No *pseudopods*, as described by Trägårdh (1903) in larvae of *Ephydra riparia* and by Tuxen (1936) in larvae of *Scatella stagnalis* Fall. (*thermarum* Collin), are to be seen. On the last segment is situated two dorsal cones, that bear the little conic, strongly chitinised plate in which the spiracles are situated, and a ventral cone on the top of which the anus is situated. The larvae of *Ephydra* and *Scatella* described by Trägårdh and Tuxen similarly carry their abdominal spiracles on elongations protruding from the body-wall, but in these larvae the elongations form long spiracular tubes. In all three stages, the head is provided with a ventral furrow which parts it into two lateral lobes. A pair of small sensory papillae, the so-called " antennae," are situated on the dorsal side of the head. On the ventral side are situated groups of pore, and other, organs. Minute pores are situated along the side of the body.



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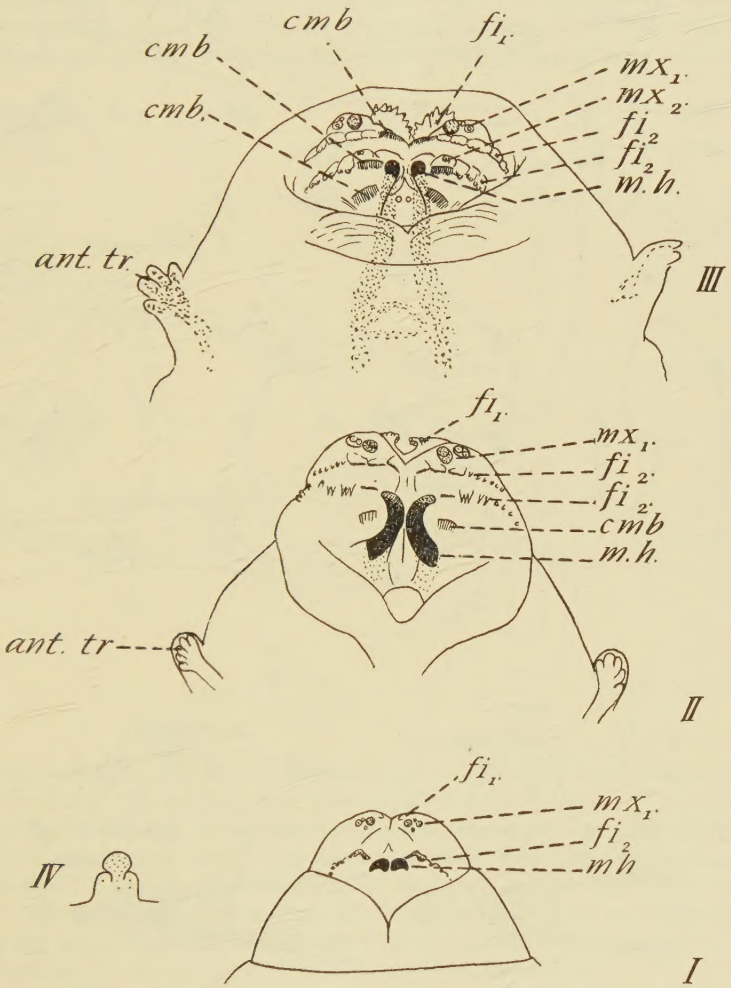
The head (fig. 6).—As mentioned already, the head is parted into two lateral lobes, each carrying groups of pore, and other, organs. Each lobe has a dorsal pore organ consisting of a thickened ring from the middle of which a thin membrane protrudes (IV). This organ is the so-called *antennal organ*. Ventrally the lobes carry groups of very complicated pore organs, considered by most authors to be homologous with the *maxillary palps* (mx_1 and mx_2). The most visible pore organs (mx_1) are situated on the fore end of the cephalic lobes. In front of these pores, a pair of lobed (fi_1) organs is situated. In 1st stage larvae these organs only consist of one little finger. In larvae of the 2nd and 3rd stages, these organs are composed of numerous little fingers. Behind the pore organs are situated rows of little finger-like organs (fi_2). In 1st stage larvae, only one row is to be seen. In larvae of the 2nd and 3rd stages, there are two rows. Second stage larvae have on the side of the mouth-opening, behind the finger-like organs, a little comb-like

bristle organ (cm.b.). The 3rd stage larvae have three such organs on each cephalic lobe (cm.b.). Two of these organs are situated at the median end of the rows of finger-like organs, behind the big groups of pore organs. The third comb-organ is situated behind these.

The mouth-hooks and the cephalo-pharyngeal skeleton (fig. 7).

The 1st stage larva (fig. 7, I and II).—Beginning posteriorly, two lateral *pharyngeal sclerites* (ph.) may be seen. They consist of two triangular plates. The apex points forwards. The back edge is incised in a semicircular bow, and thus the triangular plate forms a dorsal



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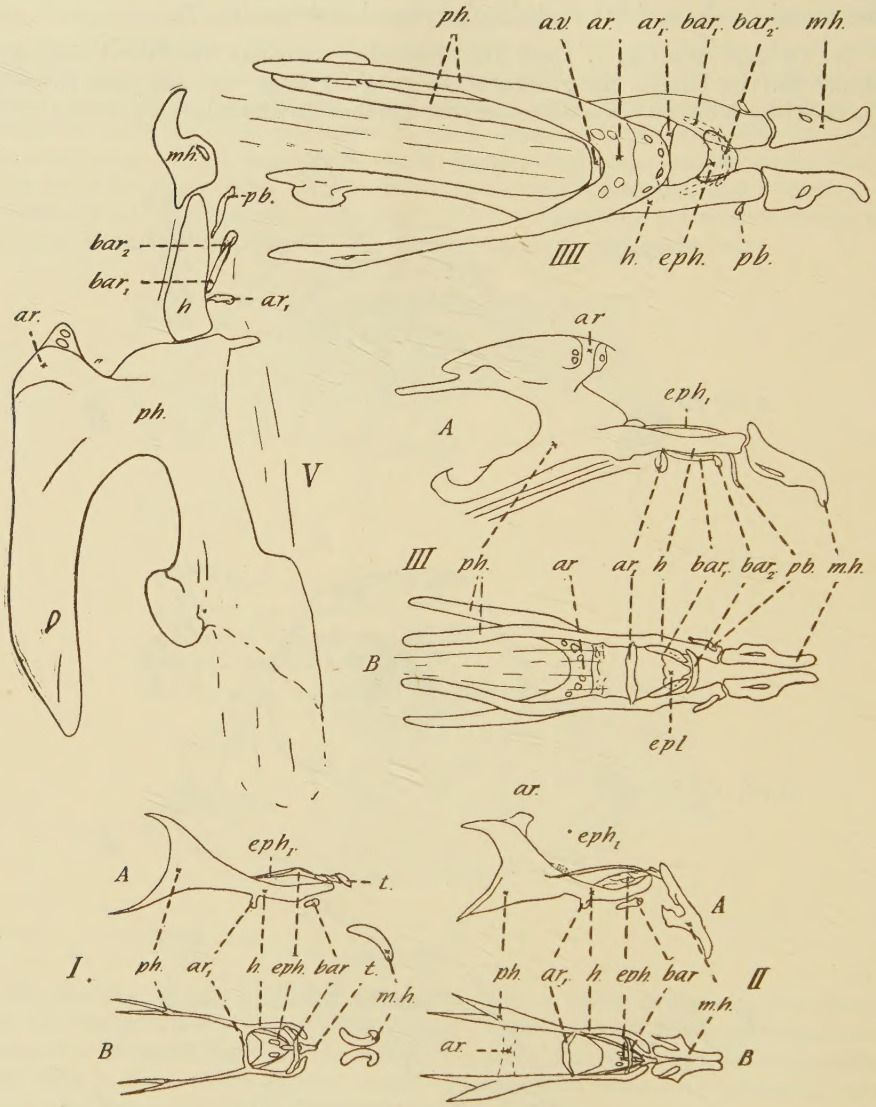
and ventral cornua, the dorsal being a little shorter than the ventral. The dorsal edge of the triangular plates is connected by a weakly chitinised arch (ar.). The angle pointing forwards is, on each plate protruding in a long arm, the so-called *hypostomal sclerite* (h.). The fore end of the hypostomal sclerites bends towards the median plane of the insect.

These arms are connected with a little ventral arch of chitin (ar_1). In front of this arch, another little chitinised arch (bar) is seen. This arch has no connection with the lateral arms. Dorsally of the two hypostomal sclerites may be seen a triangular *epipharyngeal plate* (eph.). Its apex points forwards, the other end backwards. The plate is deeply



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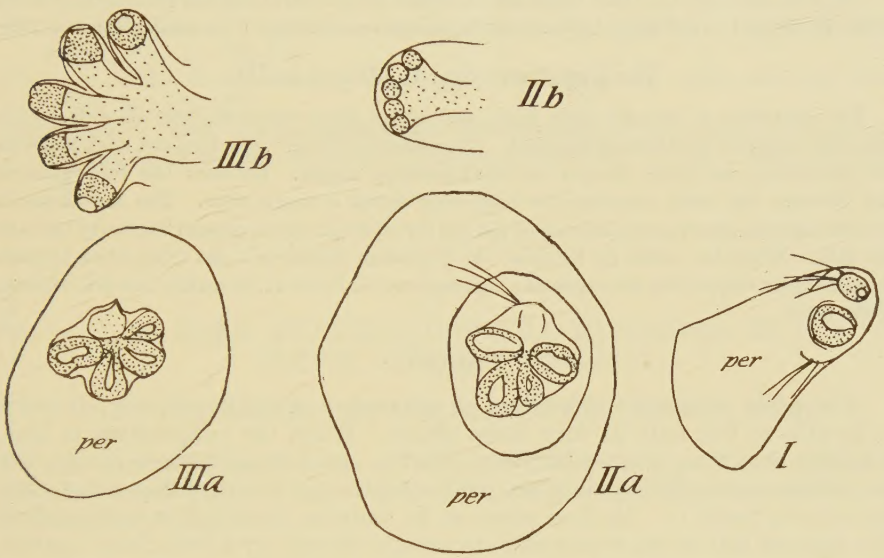
incised posteriorly, forming two long slender lateral cornua (eph_1) that seem to touch the lateral pharyngeal plates near their fore ends. A strongly chitinised *tooth* (t.) points forwards from the fore end of the plate. A pair of small openings may be seen in the plate.

When hatching from the egg, the cephalo-pharyngeal skeleton and the *mouth-hooks* (m.h.) are not fully developed (7, I). Only the fore end of the mouth-hooks is formed. Later

their basal part is formed too (7, II). The fully developed mouth-hooks consist of a claw-like fore end and two arms, one above the other, pointing backwards. The upper arm articulates to the fore end of the hypostomal sclerite.

The 2nd stage larva (7, III).—The pharyngeal sclerites (ph.) are of almost the same shape as in 3rd stage larvae. The cornua are longer than in the 1st stage, and the dorsal arch (ar.) is broader and, with the exception of the front edge, much more strongly chitinised. The two hypostomal sclerites (h.) are just as in the 1st stage, firmly connected to the pharyngeal sclerites, and form a forward-pointing prolongation of the ventral cornua. A ventral arch (ar_1) appears to connect the two hypostomal sclerites, but the connection between the sclerites and the arch is very slender. In front of this arch, another one is seen (bar_2), but this one has no connection with the hypostomal sclerites. Two little bars (bar_1) are seen between the arches. They converge slightly with their fore ends. In front of all



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these small sclerites a pair of perpendicular bars (p.b.) may be seen. They are slightly curved like an S. The epipharyngeal plate (eph.) is much reduced. It has a triangular shape with rounded angles. The backwards-pointing arms (eph_1) have lost their connection to the plate, and are now seen as two weakly chitinised bars following the dorsal side of the hypostomal sclerites. The mouth-hooks articulate at the end of the hypostomal sclerites. The two arms in the hind end of the mouth-hooks (m.h.) are now connected by their having grown together, leaving only a small opening as the remains of the deep incision between the arms of the mouth-hooks of the 1st stage larvae.

The 3rd stage larva (7, IIII, V).—The pharyngeal sclerites (ph.) do not differ much from that of the 2nd stage larva. The dorsal cornua is broader, and the back end is not chitinised. The dorsal arch (ar.) is broader and strongly chitinised. The front end of the sclerites is connected by a small ventral arch (a.v.). The two hypostomal sclerites (h.) have lost their connection with the lateral pharyngeal sclerites and now articulate to their fore end. The sclerites ventrally of the hypostomal sclerites are the same as in 2nd stage larvae, but it seems as if the arch near the back end of the hypostomal sclerites (ar_1) has

lost its connection with them. The epipharyngeal plate (eph.) has become broader. The mouth-hooks (m.h.) do not differ much from those in 2nd stage larvae.

The spiracles (fig. 8).—As in the case of other flies of the Cyclorrapha, the 1st larval stage is metapneustic. Second and 3rd stage larvae are provided with spiracles near the back edge of the first thoracic segment, besides those on the last abdominal segment. In 2nd stage larvae the thoracic spiracles are closed.

As mentioned already, the abdominal spiracles are situated on a pair of dorsal cones. The *peritreme* (per.) is the shape of a little cone on the top of which the orifices are seen. Because of the dark pigment, it is very difficult to see the exact structure. In 1st stage larvae (I) only two simple orifices are to be seen in each peritreme. By the 2nd and 3rd stage (IIa and IIIa) there are four orifices. Just after moulting or hatching the peritreme carries little bristles pointing towards its base. These bristles break easily.

The fore spiracles (IIb and IIIb) are branched in five little fingers, each with a small orifice at the end in 3rd stage larvae ; each opening is surrounded by a small chitinised ring.

The Puparium (figs. 1, III and 5, II).

The puparium is broader than high, and about three times as long as wide. It is broadest round its 3rd thoracic segment. Its colour is brown. The fore and back spiracles are protruding and form sharply outward-pointing angles. Between the fore spiracles and between the back spiracles the body-wall forms a sharp edge. The mouth-hooks and the cephalo-pharyngeal skeleton of the 3rd larval stage are to be seen ventrally beneath the skin. When the adult fly hatches, the puparium bursts in a slit from what appears to be the front edge of the 3rd segment; this segment is, however, in reality the 4th segment of the larva.

Biology.

Scatophila unicornis Czerny lives on wet stone and wet flowerpots. It seems to be able to live only in very moist places. When the temperature is high, it hardly ever flies, and walks about slowly; even when pushed it does not fly; whereas on cold days it is shy, and when the sun is out, it flies away when one tries to touch it. Its food seems to be diatoms, on which it is dependent. The eggs are laid on the stones and are usually covered by a little faecal matter. The temperature in the hothouses was about 6° C. during the night and 18–20° C. in the daytime when I began to study the fly. Under such conditions the larvae hatched out on the 14th night after the egg was laid. The three larval stages and the pupal stage lasted altogether two, or three, weeks. The larvae make their way through the egg-shell by help of the mouth-hooks. They cover their body with small stones and pellets of faeces. The covering is held to the body by means of the body hairs, and got on the back by creeping under the sand grains and pushing them up, making peristaltic movements with the body. The pupae are usually seen in places a little drier than those on which the larvae live. It is not possible to state whether the species is Danish or not. The imago can easily survive a night temperature of — 3° C. Mating was seen to take place when the temperature was only 8° C.

References.

Becker, Th., 1896, Dipterologische Studien iv. Ephydridae. *Berlin. ent. Z.* **41** : 91–276.

——, 1938, Die Ephydridae *in* Lindner, *Die Fliegen* **6.**

Bischoff, W., 1922, Über die Deutung der Mundhaken der Cyclorrhaphlarven. *Arch. Naturges.* **88** (A) (6) : 51–59.

Bischoff, W., 1924, Ueber die Kopfbildung der Dipterenlarven, iii.—Die Köpfe der Orthorrhapha-Brachycera Larven. *Arch. Naturges.* **90** (A) (8) : 1–104.
Czerny, P. L., 1900, Eine neue *Scatophila* (Dipt.) aus Oesterreich. *Wien. ent. Ztg* **19** : 205–206.
Hewitt, Gordon C., 1914, *The House-Fly.* Cambridge.
Holmgren, N., 1904, Zur Morphologie des Insectenkopfes, ii.—Einiges über die Reduction des Kopfes der Dipterenlarven. *Zool. Anz.* **27** : 343–355.
Meijere, J. C. H. de, 1916, Zur Kenntnis des Kopfbaues der Dipterenlarven und imagines. *Zool. Anz.* **46** : 241–251.
Trägårdh, L., 1903, Beitrage zur Kenntnis der Dipterenlarven. *Ark. Zool.* **1** : 1–42.
Thomsen, M., 1935, A comparative Study of Development of the Stomoxydinae (especially *Haematobia stimulans* Meigen) with Remarks on other Coprophagous Muscids. *Proc. zool. Soc. Lond.* **1935** : 532–550.
Tuxen, S. L., 1936, Die Arten der Gattung *Scatella* (Ephydridae) in heissen Quellen. *Opusc. Ent.* **1** : 105–111.
Wahl, B., 1915, Kopfbildung cyclorrhapher Dipterenlarven. *Arb. zool. Inst. Univ. Wien* **20** : 159–272.
Weismann, A., 1864, Die nachembryonale Entwicklung der Musciden nach Beobachtungen an *Musca vomitoria* und *Sarcophaga carnaria. Z. wiss. Zool.* **14** : 187–336.

ON SOME MICROLEPIDOPTERA RECORDED BY PRINCE ARISTIDE CARADJA

By T. Bainbrigge Fletcher, R.N., F.L.S., F.R.E.S., F.Z.S.

Prince Aristide Caradja has asked me to deal with some Microlepidoptera recorded or described by him and to make such redescriptions and alterations of names as are required.

Alucitidae.

Platyptilia inanis Caradja 1920, was very briefly diagnosed (*Iris* **34** : 80) as "*P. inanis* Chr. (1332 bis) : 25 quite similar specimens from Kasikoparan and the Alai were determined as this species by Lord Walsingham. The original description is not available; the insect approaches *gonodactyla*, but is narrower-winged, wholly pale grey, and the dorsum of third segment of hind-wing lacks the black scaling (as often occurs in *metzneri* also), as well as the black dorsal spot on the fore-wing, etc." There is no description by Christoph of *inanis*, which must have been an unpublished MS. name, if it originated from him. The short diagnosis quoted above, although it may be taken to validate the name, is quite inadequate for recognition of this species, which I now redescribe from a cotype (Fletcher Colln. 10277) kindly sent to me: this specimen is from Russian Armenia: Kasikoparan, Korb coll. 1901, and is labelled "*Plat. inanis* Christoph/Walsingham det." A second male specimen (Fletcher Colln. 10278), Kasikoparan 1901, Korb coll., agrees with the first, but is very worn. But a third specimen, also sent as *inanis* and labelled Alai, is a distinct species, *P. terminalis* Erschoff. It is, therefore, a little doubtful whether the other Alai specimens were really *inanis*.

Here is a redescription of *P. inanis*.

Platyptilia inanis Caradja, 1920.

♂. Expanse 18 mm. *Head* dull pale fuscous with slight ferruginous tinge : no frontal tuft. *Antenna* (broken) very minutely ciliated, pale fuscous dotted above with darker. *Labial palpus* slender, porrect, pale ferruginous-fuscous with a few whitish scales intermixed : second segment about as long as breadth of eye, with a few longer projecting scales towards its tip; third segment rather shorter than half of second, moderately acuminate. *Thorax* dull fuscous-grey, minutely sprinkled with whitish : tegulae whitish. *Abdomen* slender, about as long as from base of wing to base of cleft in fore-wing, dull greyish-brown, anal tuft lighter; base of abdomen with a broad white lateral stripe narrowing posteriorly and terminating at apex of second segment; a few whitish scales, not forming bands, across tips of second and succeeding segments. *Fore leg :* femur dull ferruginous-brown, lined rather darker beneath; tibia ferruginous-brown, whitish exteriorly, moderately dilated with scales at apex; tarsus ferruginous-brown, first segment slightly shorter than segments 2–5 together and dull whitish exteriorly. *Mid leg* dull ferruginous-brown : femur lined whitish interiorly on anterior $\frac{2}{3}$; apex of tibia emitting a pair of moderate, equal, blunt-tipped spurs; tarsal segments paler laterally except fifth, which is blackish. *Hind leg* slender, pale dull ferruginous-grey : tibia, proximal spurs from $\frac{2}{3}$, moderate, whitish with blackish-brown blunt tips, inner spur slightly longer than outer and about as long as second tarsal segment, distal spurs similar in shape and colour, inner spur slightly longer than outer, which is about as long as third tarsal segment; tarsus, first segment as long as 2–5 together, 2–5 progressively shorter, 3 to 5 whitish except at tips. *Fore-wing* rather narrow, cleft from $\frac{3}{4}$; costa fairly straight until gently downcurved from about $\frac{3}{4}$ of first segment to apex, which is very slightly subfalcate; first segment moderately broad, scarcely dilated posteriorly, its termen oblique and slightly concave, hinder angle well marked, obtuse; cleft rather broad; second segment scarcely dilated posteriorly, its termen slightly convex and less oblique than that of first segment, both angles well marked but rounded off : dull pale fuscous, mostly sprinkled with whitish scaling, so that the general appearance is greyish : the white scales tend to form a row of small dots below costa from base to $\frac{2}{3}$ and to form paler areas on the wing between base and cleft except on costal area and on dorsal area towards base; a faint aggregation of darker scales, scarcely forming an indistinct elongate spot, in cell at $\frac{2}{3}$ of wing; there is no costal triangle but before and level with base of cleft there is a minute black dot from which a short longitudinal streak runs towards base of wing and beneath this dot there is another minute black dot; below costa there is a distinct but rather ill-defined elongate whitish streak extending from a level above the praefissural dots to about half length of first segment; central third of first segment darker brown than the rest of the wing, with aggregations of blackish scales tending to form a broad-cuneate blotch below middle of segment; from $\frac{2}{3}$ of lower margin of first segment a rather broad white line, parallel to lower part of termen, not quite reaching costa and cut by ground-colour along vein 8; second segment at $\frac{2}{3}$ of its length with a broad white transverse line, parallel with termen, not reaching either margin of segment and cut with ground-colour along vein 3 : cilia on costa pale dull-fuscous, moderately edged with white near outer extremity of subcostal blotch and faintly edged with paler opposite white line on first segment; on termen of both segments narrowly dirty whitish at bases, then moderately-broadly pale dull-fuscous to half of length, beyond this white; within cleft white except on either side before extremity of cleft, where intermixed with brownish between the white transverse lines and angles of segments; on dorsum white with a slight blackish basal scale-tooth at $\frac{2}{3}$, a fuscous-brown wisp at tornus and a faint indication of a darker wisp between these two. *Hind-wing* cleft from $\frac{3}{4}$ and $\frac{1}{6}$: first segment elongate-spatulate, evenly dilated posteriorly, apex bluntly rounded; second segment slightly narrower, its fore margin gently downcurved, its tip very acute, termen very oblique, lower angle well marked;

third segment moderate, sides subparallel, rather blunt at tip, tornus not indicated: greyish densely irrorated with dull pale-ferruginous-brown: cilia of first segment greyish, on apex whitish, on termen beneath apex with darker bases as on termen of fore-wing, on lower margin of segment narrowly whitish at bases; of second segment greyish, paler at bases, especially so below tip of segment, and with a slight basal darker wisp on lower angle of segment; of third segment greyish, on dorsum with a basal row of thin white hair-scales, also present on extreme tip of segment, and commencing from about ¾ of dorsum a slight flat basal scale-tooth distant from tip of segment slightly more than its length along segment, and between scale-tooth and base of wing a few minute slightly projecting blackish scales along extreme edge of dorsum.

P. inanis is certainly a *Platyptilia* by possession of scale-tufts in dorsal cilia of both wings, but lacks any definite trace of the normal costal triangle on fore-wing. These characters, together with its general greyish appearance, with broad white lines on both segments and elongate whitish subcostal streak of fore-wing, should enable its recognition.

Platyptilia "metricoterma."

In 1920, *Iris* **34**: 80 Prince Aristide Caradja referred to another *Platyptilia* under the name of "*P. metricoterma* Wlsm. (1330 bis). M. Korb sent from Chabarowka-Kasakewitsch 15 ♂♀ examples, which Lord Walsingham determined for me as this species; hitherto only known from Japan." In 1939 (*Iris* 53: 10) Prince Caradja referred to "*Platyptilia metricoterma* f. *castaneodactyla* n. var.," from China: Shansi Province, Mienshan, and diagnosed it briefly as "like the name-form, but deeper chestnut-red-brown." As the "name-form" was totally nondescript, it was impossible to apply this description of its variety. The name *metricoterma* having originated from Lord Walsingham, although never published by him, reference was made to his collection in the British Museum, but this contains no specimens under this name. Mr. H. Stringer then kindly searched through the Walsingham Identification Register and turned up an entry (Wlsm. 1908/5334–48) of 15 specimens determined as "*metricoterma* Wlsm. Pteroph. PTT." and returned to Prince Caradja in April 1912; but this did not help in the identification of the species concerned. Prince Caradja has now most kindly sent me three of these specimens, labelled Wlsm. 1908/5342, 5334, 5336, from Chabarowka and I can only regard them as being *Platyptilia emarginata* Snellen 1884. They are larger than my Japanese examples but come well within the limits given by Snellen. In Siberia this species is perhaps single-brooded; Snellen's specimens, from Amur, were found from 25th to 30th June, but these three Chabarowka examples bear no date of capture: my Japanese examples, taken in June (presumably first brood), are larger than those taken in mid-August (presumably second brood), the former being transitional in size between the latter and the Chabarowka specimens.

This identification leaves me free to describe another species of *Platyptilia*, which, being also from Chabarowka (or Chabarovsk), might have proved identical with the mysterious "*metricoterma*."

Platyptilia melanoschista sp. n.

♂. Expanse 29 mm. Dull pale fuscous, with a slight ochreous tinge, except where otherwise stated. *Head* with long rather rough frontal tuft (at least as long as twice diameter of eye). *Antenna* very shortly and finely ciliated, faintly spotted with whitish above. *Labial palpus* long, rather slender, apex of terminal segment reaching to tip of frontal tuft; terminal segment about ½ of second, slender, acute. *Thorax:* tegulae whitish,

tips dull ferruginous-brown. *Abdomen* as long as from base of fore-wing to base of cleft, rather slender: segments 1 and 2 whitish, third and succeeding segments slightly suffused with dull ferruginous-brown, tips of segments 2–6 with a small dorsal fuscous blotch, less evident after segment 3; anal tuft paler, with a few pale ferruginous-brown hairs intermixed. *Fore leg:* tibia whitish except towards apex, which is slightly dilated; tarsus, segments whitish except at tips. *Mid leg:* tibia long, whitish except towards apex, which is fuscous and slightly dilated and emits a pair of moderate unequal spurs; tarsus, first segment long, slender, as long as 2–5 together, segments dull whitish, slightly brown above, especially towards their tips. *Hind leg* rather long, slender: tibia whitish, lightly irrorated with pale fuscous-brown especially on outer side except below proximal spurs, which are emitted at about $\frac{3}{5}$ and are moderate, blunt-pointed, outer spur about $\frac{4}{5}$ of inner, extreme apex of tibia darker, distal spurs moderate, whitish, blunt-tipped, subequal, shorter than third tarsal segment; tarsus, first segment approximately as long as 2–5 together, whitish, on posterior half suffused dark fuscous-brown, segments 2–4 whitish, faintly suffused brownish at tips, segment 5 whitish. *Fore-wing* cleft from $\frac{4}{5}$, segments broad: first segment strongly dilated towards termen, costa rather strongly arched towards apex, which is slightly produced, subfalcate, termen strongly concave below apex, almost straight on its lower half, lower angle well marked, rounded, lower margin straight; second segment dilated posteriorly, rather broader than first segment, its upper margin fairly straight, upper angle rounded, termen slightly convex and oblique, tornus rounded; costal and dorsal areas irrorated with pale dull reddish-brown and a slight accumulation of similar scales, scarcely forming a blotch, in disc at $\frac{1}{3}$; cleft narrowly margined with blackish, less evident on exterior third; the usual costal triangle replaced by a dull reddish-brown inwardly-oblique bar well before cleft and reaching $\frac{2}{3}$ across wing, its inner edge rather indefinite, its outer edge sharply margined across end of cell with blackish scales which here accumulate to form suffused streaks across this bar; this bar is followed by a conspicuous pale whitish-ochreous area across base of first segment and base of cleft; remainder of segments reddish-fuscous, irrorated darker on lower half of central third of first segment and on outer half of second segment; [in some specimens an ill-defined whitish transverse line, more or less parallel to termen, across both segments at about $\frac{2}{3}$]: cilia [on costa brownish but black from outer edge of transverse bar to $\frac{2}{3}$ of first segment, cut with white above whitish-ochreous area, and whitish with some brown admixture on outer third of first segment, on apex blackish, on termen of first segment whitish with black bases, within cleft white but blackish on exterior $\frac{2}{5}$ of cleft, on termen of second segment white with rather broad blackish basal line, on dorsum beneath second segment blackish, otherwise white with a rather broad black scale-tooth at $\frac{2}{3}$ and another, smaller, at $\frac{5}{6}$.] *Hind-wing* cleft from $\frac{1}{2}$ and $\frac{1}{6}$, segments rather broad, first segment spatulate, tip rounded, second segment fore margin faintly convex, tip moderately acute, termen very oblique, straight, lower angle well marked, third segment about $\frac{2}{3}$ of first, elongate-triangular: dull (but not dark) reddish-fuscous: cilia dull pale fuscous, mostly paler at bases, with a darker basal line around rounded tip of first segment, on tip of second segment and just beneath tip of third segment, of which the tip itself carries a few white hair-scales, on dorsum with a thin discontinuous basal line of small, narrow blackish scales and a rather broad flattened-triangular black scale-tooth commencing at $\frac{1}{2}$ and terminating at about $\frac{2}{3}$ of dorsum but not exceeding the longer cilial hairs, which, between this scale-tooth and tip of segment, are rather whiter at bases.

Type ♂ (Fletcher Colln. 10241), E. Siberia: Chabarovsk (Ussuri Railway), 22.vi.1910, *E. Borsow* coll.: cotypes, 4 ♂♂, 3 ♀♀ (Fletcher Colln. 10238–10240, 10242–10245) from same locality on various dates from 16th June to 1st July, but one ♀ on 1st August. None is in good condition, so that it has been necessary to supplement the description of the type-specimen by further

particulars, noted within square brackets, taken from other examples in better condition in these respects.

The size is slightly variable, the expanse being 27–29 mm. in seven specimens, whilst the smaller ♀ (taken on 1.viii.) is only 24 mm.

The combination of a long frontal tuft with the broad segments of wings and rather strong dorsal scale-tooth separates this from any other palaearctic species known to me. The black edging of the basal portion of the fore-wing-cleft, from which I have taken its name, is found in a few other species, such as *P. metzneri* and *P. terminalis*, which are otherwise quite distinct. In general appearance this species reminds one of a very small and dully-marked *P. nemoralis*, which, of course, has no long frontal tuft or black edging of cleft.

Eucosmidae.

Argyroploce semicirculana Caradja 1939, *Iris* **53** : 12, was described from China : Mienshan and Tapeishan and from India : Sikkim, Darjiling, but this name cannot stand, being praeoccupied within the genus *Argyroploce* by the South American *Argyroploce semicirculana* Walker 1863 (*Cat.* **28** : 396), described as a *Carpocapsa*, and I therefore rename it **Argyroploce thrasyplaca** nom. n. I have examined the type (from Mienshan, about 2000 m., 8.vii.1937), which appears to be an *Argyroploce*, and Lord Walsingham (1914, *Biol. Centr. Amer., Het.* **4** : 250–251) regarded *semicirculana* Wlk. as an [*Argyroploce* =] *Olethreutes*.

Gelechiadae.

In 1939, *Iris* **53** : 12, Prince Caradja described from China : Shansi Province, Mienshan, a species under the name of *Ypsolophus marginellus*, the name *Ypsolophus* (*nec* Fab.) being here used in the sense of *Dichomeris* Hb. Had this species belonged to this genus, its name would have been invalid as a secondary homonym of *D. marginella* Fb. 1781 (described as an *Alucita*). I have examined the type (and only known specimen), of which the palpal structure definitely removes it from *Dichomeris*, and find that it agrees structurally with *picrocarpa* Meyrick 1913, the genotype of *Carbatina* Meyrick 1913. This species will therefore stand as *Carbatina marginella* Caradja 1939.

Orneodidae.

In 1939, *Iris* **53** : 24–25 Prince Caradja has described, from Tibet : Yangtse Valley, Batang, 2800 metres, a new species as *Orneodes longipalpella* : " Exp. 21–22 mm., therefore much the largest palaearctic *Orneodes* known to me. Palpi twice as long as in *cymatodactyla* and porrect. The insect is wholly pale-dust-grey and the pale yellowish transverse bands on the segments are scarcely distinct with the exception of the fore-wing praeterminal band, which is clearly visible. On the first segment the seven costal white-edged blotches reach backwards only to half the breadth of the segment. Hind-wing pale, almost patternless. Palpi and abdomen whitish." Although indicating a striking new form, this diagnosis is hardly sufficiently complete in many details, but, thanks to Prince Caradja's kind generosity in sending me a cotype for this purpose, a fuller description is possible.

Orneodes longipalpella Caradja 1939.

♀ (by frenulum). Expanse 19 mm. *Head* with slightly rough scaling, rather erected on either side above eyes, dull whitish with slight admixture of very pale fuscous; tongue long, slender. *Antenna* dull dirty whitish, tips of segments broadly but faintly ringed

with very pale fuscous and set with short bristly scales directed towards apex. *Labial palpus* over thrice breadth of eye, twice length of head, porrect, straight, dilated with scales so that second segment is very elongate-triangular, scaling slightly rough above towards base and beneath; terminal segment (base hidden in scaling of second segment but apparently) about $\frac{1}{3}$ of second: white, coarsely sprinkled with ferruginous-brown, less so (1) on inner edge and (2) beneath on first segment and on base of second segment. *Maxillary palpus* well developed, white, ferruginous-fuscous apically. *Thorax* dull whitish, thickly sprinkled with pale dull ferruginous. *Abdomen* (broken; an abdomen, found loose in the box, probably belongs to this specimen; it is small, white with a few scattered blackish scales, without any pattern). *Legs* white, with fuscous and blackish speckling tending to form bands: hind tibia at $\frac{1}{2}$ with slight rough white scaling above, proximal spurs from slightly beyond $\frac{1}{2}$ of tibia, large, rather blunt-tipped, inner spur longer than outer, distal spurs shorter than proximal, inner longer than outer. *Fore-wing* cleft from slightly within $\frac{1}{2}$ and from about $\frac{1}{4}$, $\frac{1}{2}$, $\frac{2}{5}$ and $\frac{1}{5}$, segments linear: white, coarsely sprinkled and mostly overlaid with dull pale ferruginous-fuscous, but pale fawn-colour on base of wing before clefts: on the base of each cleft a small semi-erect tuft of long whitish scales which are broadly banded before their tips with ferruginous-brown; costa with blotches, each composed of transverse rows of fuscous scales and (except three basal blotches) rather sharply margined with white, as follows, (1) three conjoined and running narrowly along costa from near base to about $\frac{1}{6}$, third as long as first and second together, (2) a quadrate blotch at $\frac{1}{3}$, its inner edge level with base of second cleft, (3) a semi-lunar blotch, not quite crossing first segment, its inner edge level with base of first cleft, its outer edge at about $\frac{1}{2}$ of wing, (4) a similar blotch at $\frac{1}{3}$ of first segment, (5) a rather broader blotch, broader on costa, crossing first segment at $\frac{1}{2}$ of its length, (6) a narrower blotch, its inner edge outwardly oblique, its outer edge vertical, crossing first segment at $\frac{3}{4}$ of its length, areas before and beyond this blotch slightly darker, (7) a slight narrow praeapical blotch; tips of all segments with a small black spot preceded by white (non-irrorated) ground-colour; second to sixth segments rather strongly irrorated with fuscous-ferruginous to about $\frac{2}{3}$ of wing, the outer edge of this irroration indistinctly marked by lessened irroration on the whitish ground-colour, the area of each segment between this outer edge and termen composed of three approximately equal parts separated by lessened irroration, which on first and third parts is a coarse sprinkling of pale fuscous-ferruginous and on the second part is a heavier sprinkling of fuscous and blackish scales, on sixth segment this heavier sprinkling narrower than on fifth segment; the general effect of the colour-pattern is a pale grey with a slightly darker unbroken subterminal band preceded and followed by rather lighter areas: cilia whitish, darker opposite darker areas, but without any noticeable pattern. *Hind-wing* whitish, coarsely sprinkled with pale ferruginous-fuscous, with a very inconspicuous narrow pale subterminal bar caused by absence of irroration, the general effect of the whole wing being greyish-white: cilia very pale ferruginous-grey and whitish without any obvious pattern.

One ♀ cotype (Fletcher Colln. 10276), Tibet: Batang (Yangtse Valley, about 2800 metres), 23.viii.1936, *H. Höne* coll., received from Prince Aristide Caradja labelled "*Orneodes longipalpella* Caradja/Paratype."

The long labial palpus, very perceptible maxillary palpus, size, colour, and especially scale-tufts at bases of clefts of fore-wing separate this species sufficiently from any other as yet known.

A NOTE ON THE *CELASTRINA QUADRIPLAGA*-COMPLEX (LEPIDOPTERA : LYCAENIDAE)

By A. Steven Corbet, F.R.E.S.
(*British Museum, Natural History.*)

The *Celastrina quadriplaga*-complex.

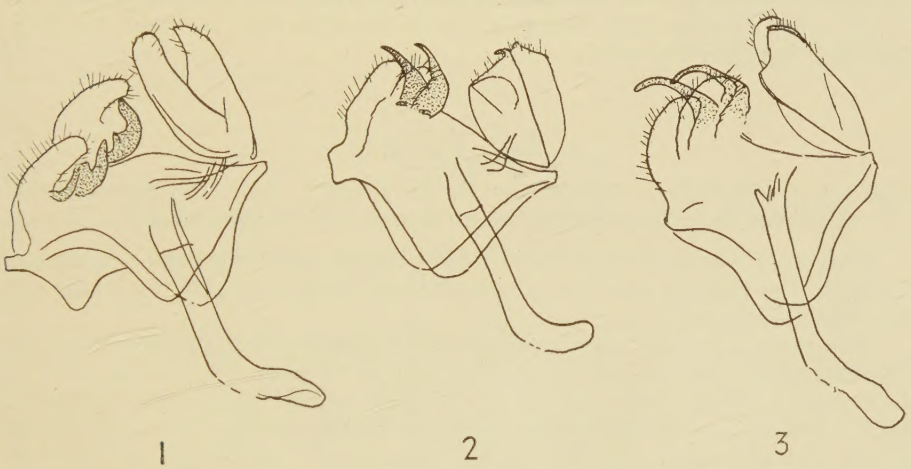
The types of *Celastrina dohertyi* (Tytler) have now reached the British Museum and it has been possible to clear up the relationships existing between the forms in the *quadriplaga*-complex.

On the male genitalia, there are three species, no two of which fly together as far as is known. It does not appear probable that only a single species is involved because Javanese *quadriplaga* has broader black bordering than Sumatran *nearcha*; the reverse would be expected with the respective geographical races of a single species.

The three species are :—

1. *C. dohertyi* (Tytler), Assam (fig. 1).
2. *C. nearcha* (Fruh.), North-east Sumatra; also Malaya and Borneo (fig. 2).
3. *C. quadriplaga* (Snell.), Java (fig. 3).

For the Malayan representative of *C. nearcha*, of which the male closely resembles that sex of *C. dohertyi* (Tytler), and the female is similar to Sumatran



Figs. 1–3.—Male genitalia of (1) *Celastrina dohertyi* (Tytler), wet-season form, Assam; (2) *C. nearcha nearcha* (Fruh.), North-east Sumatra; (3) *C. quadriplaga* (Snell.), West Java.

nearcha (Fruh.), I propose the name **C. nearcha archena** subsp. n., taking as the male holotype the specimen figured in Corbet, 1938, *Trans. R. ent. Soc. Lond.* **87** : 161, pl. 1, fig. 8, and text-fig. 2, and which is in the Selangor Museum.

Celastrina ceyx tanarata Cbt.

It has been found that *C. parvula* Cbt. (1938, *Trans. R. ent. Soc. Lond.* **87** : 161, pl. 1, fig. 17 ♂) is a small aberration of *C. ceyx tanarata* Cbt., in which the underside discal markings are obsolete.

Book Notice.

Studies in the physiology and behaviour of *Glossina morsitans* Westw. By R. W. Jack. *Mem. Dept. Agric. S. Rhodesia* **1** : 1–203 + i–vii, 3 pls., 27 figs., 59 tabs. 8vo. Salisbury, 1939.

This work is in two divisions: I. Physiology and II. Behaviour, each comprising about one-half of the book.

The first part deals with Fatal Temperatures and the influence of atmospheric conditions on physiology, welfare, development, etc. It comprises eleven chapters.

The work embodies the results of laboratory research on *G. morsitans* begun in 1936, supplemented by certain data, especially relating to behaviour, collected in the field over many years.

Book Notice.

A revision of the genus *Ashmeadiella* (Hymen., Megachilidae). By C. D. Michener. (*Amer. Midland Nat.* **22** : 1–84, 3 figs., 1 map.) 1939.

This work is a systematic revision of a North American genus of bees. It includes keys to subgenera and species, with separate sections for the sexes in each case. Four new subgenera, 20 new species and 2 new subspecies are described, and each of the species is re-described and a list of localities is given.

In every case an indication is given of the collection in which the type specimen has been deposited.

Book Notice.

Zoology of Oxfordshire. Edited by B. M. Hobby. 4to. [no place], 1939. Reprinted from the *Victoria County History of Oxfordshire* **1** : 57–222.

This work was long expected in some quarters and its present appearance is due to the Editor; some parts were written, at least in part, very long ago but these have been revised recently.

The part on Zoology opens with the Crustacea and this is followed by that concerning the Insecta, extending from page 62 to page 178, so that, as is to be expected, it constitutes the major part of the work. The work is completed by the inclusion of the Arachnida, Mollusca, Fishes, Reptiles and Amphibians, Birds, and Mammals. The lists of Coleoptera and Lepidoptera are noted as being exceptionally complete. The list of Diptera is the most complete of any County list so far published in the series of Histories. Full lists of the species recorded are given with notes on the occurrence, locality, and recorder of each species.

The County of Oxford offers more assistance to the local entomologist than most counties, for "The general series of British Insects in the Hope Department of Entomology in the Oxford University Museum . . . is readily accessible for reference . . . and is replete with excellent and well documented local material."